# CONTENTS OF VOLUME XXXII

## NUMBER I


PAGE

STRUCTURAL RELATIONS OF THE BUSHVELD IGNEOUS COMPLEX, TRANSVAAL. Reginald A. Daly and Gustaaf A. F. Molengraaff . . 1

POST-PLEISTOCENE VOLCANICS OF THE BRITISH COLUMBIA COAST. V. Dolmage . . . . . 36

GENERAL FEATURES OF THE PRE-CAMBRIAN STRUCTURE ALONG THE BIG THOMPSON RIVER IN COLORADO. Margaret Bradley Fuller . . 49

THE CORRELATION OF THE LOWER ALLEGHENY-POTTSVILLE SECTION IN WESTERN PENNSYLVANIA. B. Coleman Renick . . . . . 64

A NEW METHOD FOR MEASURING THE OPTIC AXIAL ANGLE OF MINERALS Albert Johannsen and T. C. Phemister. . . . . 81

REVIEWS . . . . . 88


## NUMBER II


THE CONTRAST IN THE EFFECT OF GRANITE AND GABBRO INTRUSIONS ON THE ELY GREENSTONE. G. M. Schwartz . . . . . 89

THE DALLES TYPE OF RIVER CHANNEL. J Harlen Bretz . . . . 139

THE VERDEN SANDSTONE. R. D. Reed and Norman Meland. . . . 150

REVIEWS . . . . . 168


## NUMBER III


THE TEMPERATURES OF HOT SPRINGS AND THE SOURCES OF THEIR HEAT AND WATER SUPPLY. Arthur L. Day, E. T. Allen, Leason H. Adams, and C. E. Van Orstrand . . . . . 177

FOOTPRINTS IN PENNSYLVANIA SANDSTONES OF COLORADO. Junius Henderson . . . . . 226

THE RELATION OF CONCRETIONS TO COAL SEAMS. José Maria Feliciano 230

JOHN CASPER BRANNER. James Perrin Smith . . . . . 240

REVIEWS . . . . . 242

## NUMBER IV

PAGE

THE PATTERN OF THE EARTH'S MOBILE BELTS. Walter H. Bucher . 265

THE TEMPERATURES OF HOT SPRINGS AND THE SOURCES OF THEIR HEAT AND WATER SUPPLY. II. George W. Morey, Oscar E. Meinzer, and E. G. Zies . . . . . 291

THE BLACK SHALE OF SOUTHWESTERN VIRGINIA. George W. Stose . 311

CORRELATION OF HURONIAN AND GRENVILLE ROCKS. Terence T. Quirke 316

HANS REUSCH. Johan H. L. Vogt . . . . . 336

PETROLOGICAL ABSTRACTS AND REVIEWS. Albert Johannsen . . . 337

REVIEWS . . . . . 344

## NUMBER V

THE RELATION OF THE PHYSICAL PROPERTIES OF NATURAL GLASSES TO THEIR CHEMICAL COMPOSITION. William O. George . . . 353

THE TEMPERATURES OF HOT SPRINGS AND THE SOURCES OF THEIR HEAT AND WATER SUPPLY. III. Thomas L. Watson and John S. Brown 373

THE DETERMINATION OF $2V$ IN SECTIONS PERPENDICULAR TO AN OPTIC AXIS. T. C. Phemister . . . . . 400

THE BREAKING OF WAVES IN SHALLOW WATER. Paul MacClintock . 407

STUDIES FOR STUDENTS: A BRIEF VIEW OF ROCKY MOUNTAIN STRUCTURE. Richard Foster Flint . . . . . 410

OBSERVATIONS ON THE FRESHFIELD GLACIER, CANADIAN ROCKIES. Howard Palmer. . . . . 432

EDITORIAL . . . . . 442

PETROLOGICAL ABSTRACTS AND REVIEWS. Albert Johannsen . . . 443

REVIEWS . . . . . 447

## NUMBER VI

THE TEMPERATURES OF HOT SPRINGS AND THE SOURCES OF THEIR HEAT AND WATER SUPPLY. IV. Kirk Bryan, Arthur L. Day, Henry S. Washington, F. E. Wright, and Robert B. Sosman . . . . . 449

TERTIARY PLANATION IN IDAHO. George Rogers Mansfield . . . 472

FOSSIL PLANTS AND UNIOS IN THE RED BEDS OF WYOMING. Edward W. Berry . . . . . 488

A NOTE ON THE LANCASTER GAP MINE, PENNSYLVANIA. T. C. Phemister . . . . . 498

PAGE

FAULTING SOUTH OF BILLINGS, MONTANA. Gail F. Moulton . . . 511

NOTE ON A COBBLE OF PECULIAR SHAPE. Chester K. Wentworth . 524

STUDIES FOR STUDENTS: THE TEACHING OF CRYSTALLOGRAPHY. D. J. Fisher . . . . . 529

REVIEWS . . . . . 543

---

NUMBER VII

THE SIGNIFICANCE OF THE FRAMEWORK OF THE CONTINENTS. Rollin T. Chamberlin . . . . . 545

MARINE INVERTEBRATE FOSSILS AS HORIZON MARKERS IN THE PENNSYLVANIAN ROCKS OF ILLINOIS. T. E. Savage . . . . . 575

INTRENCHED AND INCISED MEANDERS OF SOME STREAMS ON THE NORTHERN SLOPE OF THE OZARK PLATEAU IN MISSOURI. W. A. Tarr . 583

THE OSBURN FAULT, IDAHO. Joseph B. Umpleby . . . . . 601

THE CHEMISTRY OF THE EARTH'S CORE. Leon H. Barnett . . . 615

REVIEWS . . . . . 636

---

NUMBER VIII

MORAINES OF THE ST. LAWRENCE VALLEY. Frank Bursley Taylor . 641

SOME GEOCHEMICAL RELATIONS OF GROUND WATER AND ASSOCIATED NATURAL GAS IN THE LANCE FORMATION, MONTANA. B. Coleman Renick . . . . . 668

SOME INCLUSIONS in BASALTS. Stephen Richarz . . . . . 685

EDITORIAL . . . . . 690

REVIEWS . . . . . 696

INDEX . . . . . 717